International Journal of Accounting and Financial Management Research (IJAFMR)
ISSN (P): 2249-6882; ISSN (E): 2249-7994
Vol. 8, Issue 5, Dec 2018, 1-10

AN IMPACT OF ACCOUNTING INCOME NUMBERS ON STOCK PERFORMANCE (AN EMPIRICAL EVALUATION IN THE CONTEXT OF INDIAN STOCK MARKET)

ARNAB NAYEK[1] & DIPA MITRA[2]

[1]*Research Scholar, Indian Institute of Social Welfare and Business Management, Kolkata, India*

[2]*Associate Professor & Coordinator, M. Phil. & Ph. D Programme, Indian Institute of Social Welfare and Business Management, Kolkata, India*

ABSTRACT

It is a very general understanding that stock prices are driven by the performance of the company. Again, one of the ways to measure a company's performance is to find out the growth of earnings per share. Hence the declaration of the fantastic / poor result of the company should create investor interest as they will expect the stock price to move higher or lower immediately after such fantastic or poor result. Hence investors will expect to buy/sell the shares based on such information and profit from it in the short run. In this study fifteen no. of companies which is a part of the Nifty 50 index, have been selected to show the behaviour of the stock price movement before and after one month's announcement of the result. The analysis shows that there is no significant association between the actual performance of the company and the stock price movement immediately after the result. Studies have found a significant association between the sign of income forecast error and the sign of cumulative abnormal return before the announcement of the result. Investors should keep in mind such relations while taking investment decisions in the stock market.

Keywords: Stock Prices, Investors, Stock Market 7 Accounting Measurements and Calculations

Received: Sep 06, 2018; **Accepted:** Sep 26, 2018; **Published:** Nov 03, 2018; **Paper Id.:** IJAFMRDEC20181

Original Article

INTRODUCTION

Accounting income numbers are sources of useful information for the investors about the performance of the company. Such information helps an investor to take decision about the investments by measuring the return. When such a company is listed in the stock exchange then it provides a platform for the investors to buy and sell that share based on the performance of the company. As a result it creates a price of the company's share, determined by the market.

Developments in capital theory provides confidence for selecting the behaviour of asset prices as an operational test of usefulness. An impressive number of theories support the observation that capital markets are efficient and unbiased. If the information is useful in forming capital asset prices, then the asset prices will adjust to that information quickly and without leaving any opportunity for further abnormal gain. If, as the evidence indicates, security prices do in fact adjust rapidly to new information as it becomes available, then changes in asset prices will reflect the flow of information to the market. Change in stock prices associated with the release of the income report would thus provide evidence that the information reflected in income numbers is useful thus relating accounting income to stock price by focusing on the information which is unique to a particular firm. Specifically,

two alternative models are constructed of what the market expects income to be vs changes (if any in stock price based on that expectation. Also then investigate the market's reactions when its expectations about the income number prove false or matching with expectation.

Historically, the income of firms has tended to move together. One study found that about half of the variability in the level of an average firm's Earnings Per Share (EPS) could be associated with economy-wide effects. In light of this evidence, at least part of the change in a firm's income from one year to the next is to be expected. Historically, if the income of a firm has been related to the incomes of other firms in a particular way, then knowledge of that past relation, together with a knowledge of the incomes of those other firms for the present year, yields a conditional expectation for the present income of the firm. Thus, apart from confirmation effects, the amount of new information conveyed by the present income number can be approximated by the difference between the actual change in income and its conditional expectation.

But not all of this difference is necessarily new information. Some changes in income result from financing and other policy decisions made by the firm. We assume that, to a first approximation, such changes are reflected in the average change in income through time.

It has also been demonstrated that stock prices, and therefore rates of return from holding stocks, tend to move together. In one study,' it was estimated that about 30 to 40 percent of the variability in a stock's monthly rate of return over the period March, 1944 through December, 1960 could be associated with market-wide effects. Market-wide variations in stock returns are triggered by the release of information which concerns all firms. Since the income report that are evaluated as it relates to the individual, firm, its contents and timing should be assessed relative to changes in the rate of return on the firm's stock net of market-wide effects.

It is assumed that in the unlikely absence of useful information about a particular firm over a period, its rate of return over that period would reflect only the presence of a market-wide information which pertains to all firms. By abstracting from market effects the effect of information pertaining to individual firms is identified. Then, to determine if part of this effect can be associated with the information contained in the firm's accounting income number, then it can be segregated the expected and unexpected elements of income change. If the income forecast error is negative (that is, if the actual change in income is less than its conditional expectation), it is defined as bad news and predict that if there is some association between accounting income numbers and stock prices, then release of the income number would result in the return of that firm's security being less than would otherwise have been expected. Such a result would be evidenced by negative behaviour in the stock return residuals ($P < 0$) around the annual report announcement date. The converse should hold for a positive forecast error.

LITERATURE REVIEW

Accounting income numbers of a firm can change because of many reasons. It can change because of the different managerial decisions having been implemented. But professors BALL, RAY AND PHILIP BROWN (1967)[8] showed that a strong association has been found between the returns to a firm's stakeholders, returns to stockholders of firms in the same industry, and returns to stockholders. The objective of this paper is to investigate whether there is some "significant" -degree of association between the earnings of an individual firm, the earnings of other firms within the same industry, and the income of all firms in the economy. Benjamin King's[10] study of 63 firms over the period of June, 1927 to December, 1960 revealed that the typical stock has about half of its variance explained by price change that affects the whole market,

and industry effects accounted for an additional ten percent. Since there is also both theoretical and empirical support for the contention that a concept of earnings is related to market value, the earnings numbers might also reflect a roughly - similar degree of association. There are some common events which affect some degree the profitability of all firms; presumably there are others which affect individual industries differently; and ultimately, there are those events which affect only the specific firm. Monetary policy or changes in interest rates affect all the firms in the economy. The factors shared by firms in a given industry would include the demand for the products of the industry, and the movements of other firms into and out of the industry. Finally, individual firms will differ in important respects, such as the exact nature of their products and technologies, and their overall abilities to adapt to events which are part of a common environment. Thus, at the economy, industry, and firm levels, one would expect to find different income-influencing events, differences in their potential impact on different groups, and differences in individual reactions to the events. If accounting earnings numbers reflect these events, and if industry classifications group together firms which are similar in significant ways, then it would be reasonable to postulate an association between the earnings of any particular firm and both (1) the average earnings of the firms which constitute its industry group, and (2) the average earnings of all firms in all groups, that is, the economy. It is observed that all classifications of company groupings do not result in similar observations. This helps in developing an approach to panel data estimation for financial markets without using structural equations which are also reflected in a study by Prof. Soumitra K. Mallick, Amitava Sarkar, Kalyan K Roy, Anjan Chakraborty, Tamal Dutta Chowdhury[17].This paper carries out a dynamic analysis of stock prices in emerging economies, using a co-integration model for panel data, using "nested" procedures with subsets of company groupings and time periods - taking Indian stock markets as the concrete case. In another paper by Joseph H Anthony & K. Ramesh it is shown that Firms are grouped into various life cycle portfolios using dividend payout, sales growth, and age. This paper posits that stock market response to two accounting performance measures – sales growth and capital investment is a function of firm life cycle stage. It is also important to understand how much of the fundamental information about the company is reflected in the stock price. The efficient markets hypothesis states that publicly available information cannot be used to systematically generate abnormal returns. Hence, stock prices will readjust to the new information very quickly & always trade at their fair price. A number of recent studies develop alternative hypotheses in which stock prices deviate from fundamental (intrinsic) values'. Under these alternative hypotheses, not all publicly available information is impounded in security prices unbiased. The source of the bias varies, although it is generally based on properties of investor behaviour rather than on features of the trading mechanism. Examples include an alleged overemphasis on current stock price movements, a form of cognitive bias [De Bondt and Thaler (1985, 1987)], and an alleged overemphasis on reported accounting numbers without regard to the accounting procedures used to generate them, a form of functional fixation [Hand (1990), Harris and Ohlson (1990)]. These hypotheses imply that investment strategies can exploit the systematic bias, identify mispriced stocks, and generate abnormal returns as stock prices subsequently gravitate back to 'fundamental' values. These alternatives are not consistent with the efficient markets hypothesis. According to Ou & Pennman (1989), Firms' ('fundamental') values are indicated by information in financial statements. Stock prices deviate at times from these values and only slowly gravitate towards the fundamental values. Thus, analysis of published financial statements can discover values that are not reflected in stock prices. However Eugene Fama[2] suggests that successive price changes for a given security may be totally unrelated with the real world economic and political events. Hence investor action based on such information may not deliver desired result which is in line with the random walk hypothesis. However the existence of intrinsic value for individual securities is not inconsistent the Random Walk hypothesis. An important observation was published by Eugene F.Fama, Lawrence

Fisher, Michael C. Jensen & Richard Roll[22] that there seems to be no way to use a split to increase one's expected return unless of course inside information is available. It was observed that stock prices behave abnormally before the announcement of the corporate information and after the announce it gradually stabiles. In this connection, in a paper by Mandelbrot & Samuelson[13] it was shown that successive changes in stock prices are very nearly independent & independence of successive price changes is consistent with an efficient market i.e market adjusts rapidly to new information.

RESEARCH OBJECTIVE

The objective is to find out the influence, if any, of accounting income number on investor returns. If there is a stronger influence than market participants can use such information post release to generate profit by trading the stock price. If such information is already discounted from the price, then profit cannot be made by using such information once it is public (Efficient Market Hypothesis). Investors build up the expectation of the performance of the company based on the past relation. Actual performance may fall short of expectation, may overshoot the expectation or just match the expectation. The objective is to understand the association of such forecast error with the investment return. In the context of Indian stock market it is shown the differences in investor sentiment &its impact on investment decision making pre & post release of such information. Following are the research objective-

- To find out behaviour of stock price movement before the announcement of the result.
- To find out behaviour of stock price movement after the announcement of the result
- To understand the association and strength of the association of income forecast error and the investment return before the announcement of the result.
- To understand the association and the strength of the association of income forecast error and the investment return after the announcement of the result.

Hypothesis

- There is no relationship between the sign of the income forecast error and the sign of the cumulative abnormal return of the stocks *up to the quarterly report announcement.*
- There is no relationship between the sign of the income forecast error and the sign of the cumulative abnormal return of the stocks *after the announcement of the result*

RESEARCH METHODOLOGY

The study will be conducted to find out the above mentioned objective in the context of Indian Stock market of Nifty 50 stocks and the relevant period of the study will be from June 2012 to June 2017. Closing stock price data are obtained from the National Stock Exchange website on a 5 minute interval. Based on the closing price information calculated the return on 5min interval. A similar process is followed by the Nifty five minute data. Stock beta is a measure of systematic risk. It is calculated by regressing the stock return with respect to the benchmark return. Beta is used to find out the abnormal return of the stock. Abnormal return is the excess return delivered by the stock over and above the expected return. It can be on the positive side as well as on the negative side. Calculated the expected return on the stock by multiplying Nifty return with stock beta. It had been observed in many studies that individual company earning is a

combination of company specific initiatives and also market specific movement. Almost fifty percent of the earning variability is explained by the market earnings. Hence it is expected that there will be a relation between the market earning and the stock earnings. Conditional expectation factor is calculated to find out such relation which can explain the future earning variability of the stock to a certain extent based on the market earning. If the actual earning of the company is above the expected then it is known as positive abnormal return and if the actual earning of the company is lower than the expected earning based on the conditional expectation factor then it is known as negative abnormal earning. Hence it is required to find out the association and strength of association between signs of abnormal earning of the company and sign of cumulative abnormal return before and after the announcement of the result.

Sample Size

To conduct the study total 15 companies have been selected according to the ISIN from the Nifty 50 index. Closing stock price data about each day with a 5 minute interval of the above fifteen companies and the Nifty have been collected for the period of one month before the announcement of results and after one month of the announcement of the result. Sample EPS of Nifty and the 15 companies have been collected for the period of June 2012 to June 2017.

Statistical Tool & Technique

Microsoft excel is used to calculate the stock return and change in earning of Nifty and change in earning of the company. Stock Beta and conditional expectation factor are also calculated with the help of Microsoft Excel. SPSS is used to find out the significance and strength of the association between the two variables.

Data Collection

Three classes of data are of interest: the contents of income reports; the dates of the report announcements; and the movements of security prices around the announcement dates. Quarterly Income numbers of fifteen companies chosen alphabetically from Nifty 50 index starting from June 2012 through June 2017 were obtained from Prowess data base. Also Nifty quarterly EPS data are collected from the National Stock Exchange.

Quarterly Report Announcement Dates

The National Stock Exchange publishes quarterly and annual report announcement dates. Such dates are collected for the purpose calculating the stock return before one month of the announcement and after one month of the announcement of the result.

Stock Prices

Stock price data are obtained from the National Stock Exchange. The data used are intra-day (5 min) closing prices of the first 15 stocks on NSE index , adjusted for dividends and capital changes, for the period one month before and after the announcement of the June 2017 quarterly result .

Inclusion Criteria

Firms included in the study met the following criteria:

- Earnings data available on the Prowess Data base for each of the quarter June 2012 – June 2017
- Fiscal year ending March 31;

- Intra-day Price data considered for at-least 2 month. One month before the result and one month after the result; and
- Quarterly result announcement dates are available.
- Corporate action effects are reflected in the price

ANALYSIS FINDINGS AND DISCUSSION

Table 1

Companies	Income Forecast Error	CAR Before Result	CAR After Result
Acc	56.25361	5.6802	3.9333
Ambuja Cement	55.5425	5.9111	4.6367
Axis Bank	8.8687	3.9526	-6.1828
Bajaj Auto	15.0238	-1.3194	-2.0223
HDFC Bank	-19.268	4.9549	8.5704
Bahrti Airtel	67.0957	13.5253	2.2056
Cipla	893.4804	1.6255	-2.4153
Eicher Motor	0.05655	9.9404	1.4707
Gail	290.9239	0.05086	5.94831
Adani Port	-39.2447	4.0465	-0.8193
Asian paint	-8.7988	-2.8311	1.1524
Auro Pharma	-28.9909	-5.72746	9.3451
Hindustan Lever	8.9967	4.1173	1.1040
Coal India	-12.2419	-5.7449	8.7153
Dr Reddy	-80.4095	-5.3015	-22.3809

The above table shows the calculated income forecast error for each company and the respective CAR upto the result and after the result. Negative sign indicates actual is lower than expected and positive sign indicates actual is more than expected.

In **Figure 1** represents the CAR reactions around the earnings announcement of the entire sample along with the CAR reactions when the income forecast error is positive or negative. There appears to be no general trend for all the data- a trading strategy is only viable if the nature of the earnings surprise is known ex ante.

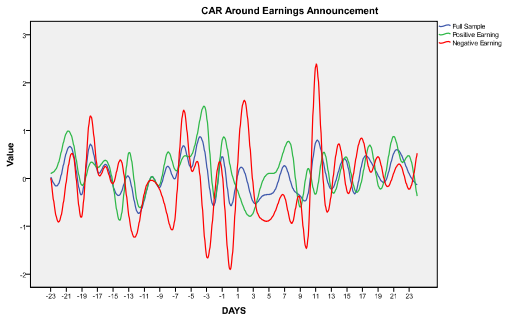

Figure 1

The **Figure 2** below the behaviour of CAR before and after the result is shown for the companies where the income forecast error is positive. It can be observed that there is an increasing trend in CAR before the result and then there is a gradual decline in CAR trend after the announcement of the result even though the results announced are very

positive. Moreover, a close observation will reveal that arise in the CAR is very sharp just before 3 to 4 days of result and CAR falls very sharply within next 3-4 days after the announcement of the result.

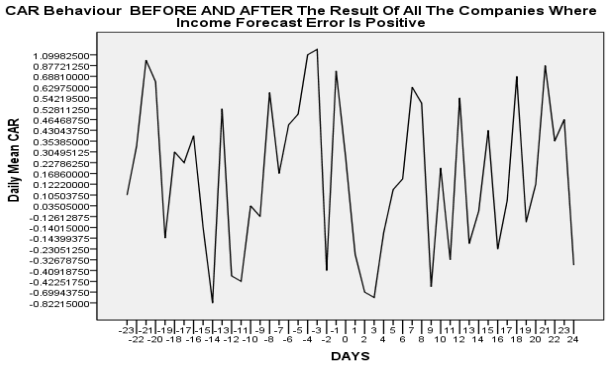

Figure 2

In **Figure 3** the behaviour of the CAR is explained before and after the announcement of the result. This behaviour of the CAR is reflected when the income forecast error is negative. It can be observed that there is a falling trend of CAR before the announcement of the result and such trend reverses during the period of post result announcement even though the results are negative. Specifically the CAR behaviour is very sharp just 3-4 days before and after the announcement of the result.

Figure 3

To test the NULL Hypothesis i.e. there is no significant association between the sign of income forecast error and the sign of the cumulative abnormal return before the result Chi Square test is performed with the help of SPSS. Since the sample size is small and there are less than 5 cases in a 2 × 2 contingency table it is also important to run the Fishers Exact test at a 5% significance level.

SPSS is used to test the significance of the association and the strength of the association between the sign of income forecast error and the sign of CAR before the result and after the result.

The result of CHI SQUARE test between the sign of the income forecast error and sign of CAR before the announcement of the result is mentioned below-:

Table 2: Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	11.250[a]	1	.001		
Continuity Correction[b]	7.813	1	.005		
Likelihood Ratio	13.689	1	.000		
Fisher's Exact Test				.002	.002
N of Valid Cases	15				
a. 3 cells (75.0%) have expected count less than 5. The minimum expected count is 2.00.					
b. Computed only for a 2x2 table					

From the above, it can be seen that the significance level is less than 5 % for the chi square test for one degree of freedom. Hence we reject the null hypothesis.

But as the sample size is small and there are more than 75% cases were observed number is less than 5 hence also performed the Fishers Exact test were also the significance level is less than 0.05. It suggests that null hypothesis should be rejected.

Table 3: Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.866	.001
	Cramer's V	.866	.001
N of Valid Cases		15	

The above table suggests the strength of the significance. Since the phi value is 0.866 it means there is strength in the relationship. Since the cross tab is a 2x2 table Phi is the appropriate measure of association.

To test the second NULL Hypothesis i.e there is no significant association between the sign of income forecast error and the sign of the cumulative abnormal return after the result Chi Square test is performed with the help of SPSS. Since the sample size is small and there are less than 5 cases in a 2x2 contingency table it is also important to run the Fishers Exact test at a 5% significance level.

The result of CHI SQUARE test between the **sign of the income forecast error and sign of CARafter the announcement of the result** is mentioned below-

Table 4: Chi-Square Tests

	Value	df	Asymp. Sig. (2-Sided)	Exact Sig. (2-Sided)	Exact Sig. (1-Sided)
Pearson Chi-Square	.417[a]	1	.519		
Continuity Correction[b]	.012	1	.914		
Likelihood Ratio	.415	1	.519		
Fisher's Exact Test				.622	.455
N of Valid Cases	15				
a. 3 cells (75.0%) have expected count less than 5. The minimum expected count is 2.40. b. Computed only for a 2x2 table					

From the above, it can be seen that the significance level is much higher than 5 % for the chi square test for one degree of freedom. Hence we reject the null hypothesis.

But as the sample size is small and there are more than 75% cases were observed number is less than 5 hence also performed the Fishers Exact test were also the significance level is less than 0.05. It suggests that null hypothesis should be rejected.

Table 5: Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.167	.519
	Cramer's V	.167	.519
N of Valid Cases		15	

The above table suggests the strength of the significance. Since the phi value is 0.167 it means there is no strength in the relationship. Since the cross tab is a 2x2 table Phi is the appropriate measure of association.

CONCLUSIONS

Recommendation (Managerial Implication)

The initial objective was to assess the usefulness of existing accounting income numbers by examining their information content. Whether the income number of the firm after announcement can be used by the investors within a specific period to generate excess return was a great question. Because investors generally make investment decision on the basis of information which is publicly announced. Investors give great importance to the income numbers. Based on the above analysis, it is observed that investor's expectation, about the performance of the company is getting discounted by and large before the announcement of the result. Hence such information hardly has any value once it is public. Thus, leaving no scope of making abnormal return post announcements.

Limitation

The above study is limited in scope only in respect to the Indian Stock market. Only those stocks which are a part of Nifty is considered for the study.

Future Scope

This study raises several issues for further investigation. There remains the task of identifying the media by which the market is able to anticipate net income: of what help are interim reports and dividend announcements? The relationship between the magnitude (and not merely the sign) of the unexpected income change and the associated stock price adjustment could also be investigated. This would offer a different way of measuring the value of information about income changes, and might, in addition, furnish insight into the statistical nature of the income process. Also, it is important to find out how fast such information is getting discounted, leaving no scope of abnormal gain. A different set of stocks outside the index can also be selected to perform the study to see the level of market efficiency.

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